REMARKS/ARGUMENTS

Reconsideration and allowance in view of the foregoing amendment and the following remarks are respectfully requested.

The Abstract of the Disclosure was objected to as using the term "comprises". The Abstract has been revised above to change "comprises" to -- includes --. Reconsideration and withdrawal of the objection are requested.

Claims 1-9 were rejected under 35 USC 103(a) as being unpatentable over Haug et al in view of Haxton. Applicant respectfully traverses this rejection.

Claim 1 provides for a marine, flexible, integrated umbilical comprising *inter alia* an armoring, weight adding band wrapped around the filler material along the entire length of the umbilical. As previously asserted, the secondary reference to Haxton does not teach or suggest the modification of Haug so as to provide an armoring and weight adding band along its entire length as specifically required by applicant's claims. Indeed, as detailed hereinbelow, Haxton is mostly concerned with adding weight to create a dynamic section of an umbilical.

The objections and statements made by the Examiner in response to applicant's prior arguments have been considered by the inventors and the Chief Patent Counsel at the assignee, all of whom have been within this particular technical field for decades. With all due respect, the Examiner is urged to reconsider the statements and interpretations made in the final Official Action in light of the following:

Firstly, applicants respectfully disagree with the examiner's determination that Haxton some how teaches or renders obvious armoring and weight adding the entire length of the umbilical. In this regard, on page 7, second half, the Examiner provides his understanding/interpretation of "static umbilical" and "dynamic umbilical". With respect, the Examiner's interpretation is not in accordance with the definition embraced by a person skilled in this art. Rather, the inventors have provided the following

definitions which are submitted to be those adopted by the skilled artisan in this technology: The static section of an umbilical is the section that is supposed to remain on the sea bed after deployment of the umbilical. The dynamic section is the section that extends from the sea bed towards a floating surface vessel. Such dynamic section is suspended in the water and is exposed to movements caused by tide, sea currents, wind or any movements of the vessel. Normally, but not necessarily, the dynamic section is suspended in a catenary curve configuration in the sea.

It is to be noted that all movements in the dynamic section will, sooner or later, cause fatigue and potentially subsequent rupture. Thus, movements in the dynamic section are always attempted to be kept as small as possible. One way of doing this is to do as Haxton suggests, namely add steel tape to the dynamic section (vertical section) in order to increase the weight/diameter ratio. However, the dynamic section does not need to have steel tape all the way along its length. For example, conventionally, the upward curved section of a catenary curve will normally omit the steel tape in order to achieve possible buoyancy at that section.

It is further to be understood that the static section of an umbilical is the major part of an umbilical, keeping in mind that such an umbilical can extend 60 kilometers or more. The dynamic section is perhaps only a few hundred meters, depending on the water depth. And most important, since fatigue and subsequent rupture are not issues for the static section of the umbilical, you do not need to wind a steel band onto a 60 kilometer length in the absence of some reason to do so. Otherwise, it would not have a particular purpose and would merely add to the cost of the structure.

The Examiner's quote from Haxton reads "The present umbilical is suitable for both static and dynamic applications". Applicant agrees. When claim 1 of Haxton is considered, you have a typical static umbilical intended for quiet rest on the sea bed. When reading claim 6, you have a dynamic umbilical, and as they state "for a desired

dynamic length". As noted above, the steel tape would be added only for a desired length.

In further support of applicant's position, consider the following quotes from the Haxton patent.

Column 1, lines 44-48:

"Where dynamic application is required the umbilical will be produced in a single length of static umbilical and the additional layers required for the dynamic section applied. This eliminates the need for the factory splicing of the dynamic to the static sections".

From this it is understood that an umbilical is taken according to any one of claims 1-5 as a basic structure and then the features of claim 6 are added to make a dynamic section, e.g., at or near one end of the umbilical, when desired. Importantly, without the need to perform any splicing, they just need to wind the steel band directly onto the base umbilical near the end to form the dynamic section.

Column 1, lines 55-63:

"Fig. 1 is a section through a first ....a static section."
"Fig. 2 is a section through a second ....a dynamic section."
"Fig. 3 is a section through a third ....a dynamic section."

In this regard it is noted that Figure 1, which depicts the static section, omits the steel band whereas Figures 2 and 3 include such.

Column 2, lines 38-44

"DYNAMIC SECTION (As above but with the following additional layers). See FIG 2 and FIG 3.

Ballast layers, Multi-helical wound layers 112, 212 of steel 112a or 112b tape to achieve the required weight/diameter ratio. The tape 112a, 112b is applied directly to the static section for the desired dynamic length."

All the foregoing quotes emphasize and support applicant's understanding that Haxton never intended to wind a steel tape all over the entire length of the umbilical. Rather, he was concerned with how to transform a part of a static section to a dynamic section without splicing. Haxton teaches that this can be achieved by winding one or more steel tape layers directly onto a desired length of the base umbilical, presumptively near the ends, so that no splicing is needed.

Haxton was never concerned about an umbilical that could become afloat, the problem addressed by the present application. As explained in the specification, a main reason for the steel band provided according to the invention onto the entire length of the umbilical is to anchor the umbilical on the sea bed in shallow waters, where the umbilical may be undesirably lifted from the sea bed. This is of particular importance when the waters into which the umbilical is to be deployed are subjected to heavy ocean currents and tides that would be able to move the umbilical back and forth or even bring it up to the surface. Then the umbilical would experience the same problems as encountered with conventionally dynamic sections. As the Examiner will no doubt appreciate, the inventors recognized that it was of great importance to have the umbilical rest quietly on the sea bed even in shallow waters and, therefore, the invention was developed wherein the steel band is wound along the entire length of the umbilical, even if the costs are higher. In deeper waters, such problems would generally not be encountered. Thus, the steel band provided according to the invention is not too create a dynamic section as taught by Haxton but rather to weight the entire umbilical so that it remains substantially where it is originally disposed on the sea bed. In addition to the anchoring function, as also mentioned in the specification, the provision of a steel band provides added advantages, including protection against falling

items, such as fishing gear and the like. An umbilical is more vulnerable to such hazards in shallow waters.

It is noteworthy that an umbilical embodying the invention has been installed in shallow waters along the coast of Australia, New Zealand and Mexico with great success.

For all the reasons advanced above, it is respectfully submitted that Haxton does not teach or in any way suggest the provision of an armoring and weight adding band along an entire length of an umbilical but rather teaches only providing steel banding along selected portions of a base umbilical to create dynamic sections without the requirement for splicing specially designed umbilical sections. Thus, Haxton does not teach or suggest the invention specifically claimed by applicant and the combination of Haug and Haxton would not produce the claimed invention. The prior art of record also fails to teach or in ay way suggest the problem addressed by the invention and, thus, does not motivate the skilled artisan to incur the substantial additional expense to produce the invention claimed. In the absence of a motivation to produce the invention claimed, the invention would not have been obvious to the skilled artisan.

All objections and rejections having been addressed, it is respectfully submitted that the present application is in condition for allowance and an early Notice to that effect is earnestly solicited.

Respectfully submitted,

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